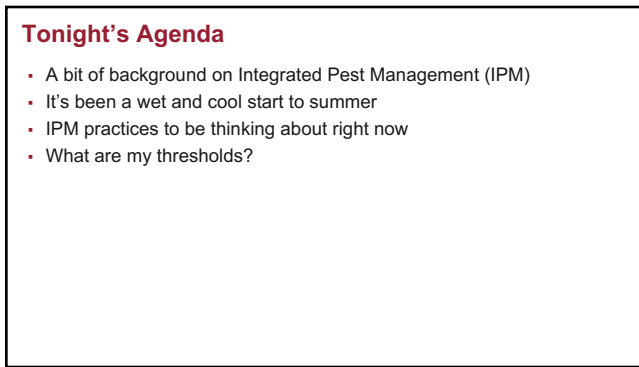


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Integrated Pest Management

Washington State University defines Integrated Pest Management (IPM) as:

"an **effective** and **environmentally sensitive** approach to pest management. IPM works by reducing sources of food, water, and shelter for pests and *only using least-toxic pesticides when necessary*. An effective IPM Program **requires identifying and monitoring pest populations**, and then selecting the most effective control methods with the least possible hazard to people, pets, and the environment."

The United States Department of Agriculture (USDA) defines Integrated Pest Management (IPM) as:

"a sustainable approach to **managing pests** by combining biological, cultural, physical, and chemical tools in a way that **minimizes economic, health, and environmental risks**."

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"IPM does not mean simply switching from chemical pesticides to organic pesticides. Nor does it mean eliminating the use of all chemical pesticides completely. IPM is a **strategy** that uses various combinations of pest control methods, biological, cultural, and chemical in a compatible manner to achieve satisfactory control and ensure favorable economic and environmental consequences. **IPM is not one single action, it is a process, a series of steps that must be carefully thought out ahead of time. Each step depends upon the given situation, the given pest and your given ability, both physically and financially, to accomplish all of the steps.**"

Clemson University Agricultural Extension

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An ecosystem-level approach to pest management using a combination of complementary methods to manage pests in a more sustainable manner and that only uses pesticides as a last resort. It is about creating the conditions in which pests do not thrive.

IPM is really about your relationship to the non-human organisms that inhabit your garden.



Photo Credit: Gia Parsons

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A bit of history

- The practices behind IPM have a long history, but IPM as a concept dates to the 1950s when pest control scientists began to develop pesticide programs based on field evaluation of insects rather than based on a calendar. It became a larger area of study in the 1960s as scientists began incorporating other pest control approaches such as biological and cultural control.
- IPM is a scientifically backed form of pest management. It is used in many large scale industrial agricultural operations, small organic farms, and neighborhood gardens as well as cities, schools, businesses, and parks.
- Much of the science of IPM has been developed for industrial operations.
- Industrial growers have different goals than the home gardener thus they have different thresholds of action. These are often based on economic considerations such as yield, plant damage, and cosmetic appearance.
- Meeting yield goals and cosmetic standards can require significant pesticide use.

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Thresholds

- One of the key components of any IPM definition and any IPM practice is the idea of thresholds.
- Action thresholds are "points at which pest populations or environmental conditions indicate that pest control action must be taken." (WSU)
- For commercial growers, thresholds of action are usually economic decisions, but this is not usually the case for the home grower.
- What are your thresholds for "action and what kind of "action" will you take?

Leaf Miner damage on chard



Photo Credit: Sue Kraemer

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What do you want from your garden?

How much insect/pest damage are you willing to live with?

Slug damage on kale



Photo Credit: Gia Parsons

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What is IPM?

Integrated Pest Management is a science-based approach that combines a variety of techniques. By studying their life cycles and how pests interact with the environment, IPM professionals can manage pests with the most current methods to improve management, lower costs, and reduce risks to people and the environment.

IPM tools include:

- Alter surroundings
- Add beneficial insects/organisms
- Crow plants that resist pests
- Disrupt development of pest
- Prevention of pest problem: developing
- Disrupt insect behaviors
- Use pesticides

1 IDENTIFY/MONITOR
Determine the causal agent and its abundance (contact your local extension agent for help)

2 EVALUATE
The results from monitoring will help to answer the questions: Is the pest causing damage? Do we need to act? As pest numbers increase toward the economic threshold, further treatments may be necessary.

3 PREVENT
Some pest problems can be prevented by using resistant plants, planting early, rotating crops, using barriers against climbing pests, sanitation, and sealing cracks in buildings.

4 ACTION
IPM uses multiple tools to reduce pests below an economically damaging level. A careful selection of preventive and curative treatments will reduce reliance on any one tactic and increase likelihood of success.

5 MONITOR
Continue to monitor the pest population. If it remains low or decreases, further treatments may not be necessary, but if it increases and exceeds the action threshold, another IPM tool should be used.

Entomological Society of America

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1. Know your pest
2. What are my thresholds?
3. Choose the best management options
4. Prevention practices
5. Monitor and evaluate

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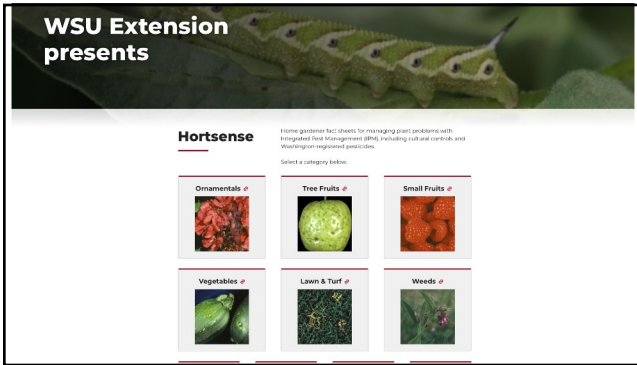
Know Your Pest/Issue

- IPM practices are geared to specific pests. Your first step is to identify the pest and to confirm that it indeed is causing issues. Insects and pathogens that cause harm are often specific to plant type or species.
- Insect and pathogen identification can be tricky and takes practice. There are books and other online/AI resources available. WVSU offers many IPM factsheets on specific crops and it is often easier to start with the plant first.
- Life cycle matters. Often it is too late to prevent insect damage for that year. Management practices can differ by stage of life cycle.

Brown Marmorated Stink Bug

Photo Credit: Heidi McKibbin Cooper

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- Some of you might have had stunted tomato plants with yellowing leaves or slow growing hot weather crops.
- Others out there may be seeing the signs of fungal or bacterial diseases that thrive in cool wet weather.
- This would be a good time to think about management practices that could reduce these issues.
- Example, give your plants plenty of space for air to flow around and through them or think about the varieties you are growing. Which ones are doing the best? Are you over or underwatering? (I needed to modify my greenhouse ventilation system)
- Example, if you have diagnosed a fungal issue and you are planning on using a fungicide, applying them in the proper way and at the proper time is key.
- Example, too much shade.

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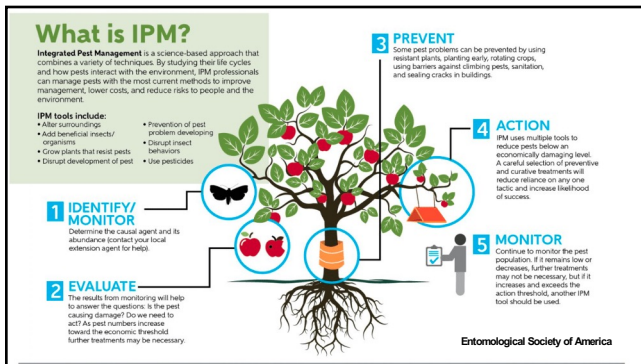


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Remember that IPM is more than just whether you use pesticides or not. It is an ecosystem level approach to create the conditions in which pests do not thrive in your garden.

What are the things I can do today that will help me achieve those goals? How do I prevent pests from becoming an issue?

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Prevention

- This includes design.
 - You can design your garden and landscaping in ways to reduce pest management. Sometime this means compromise.
- Cause may be multifaceted. Many pests and diseases require a non-target host.
 - Ex. Removing juniper species will reduce rust damage or stopping ants to prevent aphid or scale damage.
- Be careful with your fertilization practices. Scaling back how much, the timing, or the method of fertilization can have dramatic effects on pest populations.
- Be careful with your irrigation practices. Many bacterial and fungal diseases are exacerbated by overhead irrigation.
- Stressed plants are more susceptible to bacterial, fungal, and insect issues.

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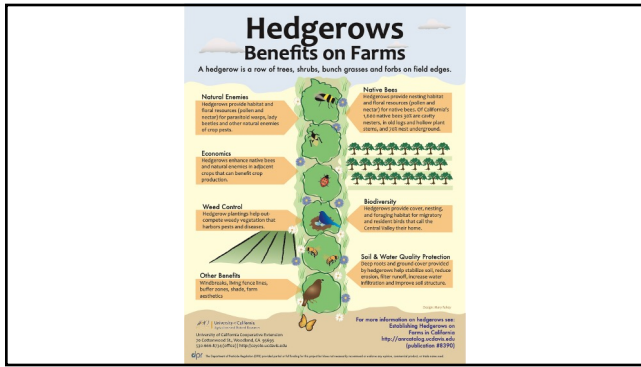
IPM is not a single action but a long-term strategy. What practices can I do today that will help me achieve my long-term goals, such as increasing plant diversity, building hedgerows, or planting for wildlife?

Ex. Birds, cabbage moths, and codling moths

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What are your thresholds?

- When is the appropriate time to intervene? How many holes in my kale before I want to do something?
- Thresholds of action are specific to you and your values, to what you are growing, and to your labor.
- For example, if the plant you are growing is perfectly edible even with a little insect damage, how much effort do you want to put into its aesthetic appearance?
- For example, does the variety of apple or the azalea you grow require more labor, money, or pesticides to achieve your desired results?
- For example, does the solution to the issue align with your personal gardening philosophy?

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- What do you want from your garden?
What are your goals?
- How do those goals align with the potential pest management practices needed to achieve them?

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The best management decision is the one that aligns with your gardening philosophy and your thresholds of action.

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WSU Extension presents



Hortsense

Home gardeners face threats to managing plant problems with Integrated Pest Management (IPM), excluding cultural controls and Washington-regulated pesticides.

Select a category below:

<p>Ornamentals</p> 	<p>Tree Fruits</p> 	<p>Small Fruits</p> 
<p>Vegetables</p> 	<p>Lawn & Turf</p> 	<p>Weeds</p> 

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Questions?



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Resources

- <https://hortsense.cahnrs.wsu.edu/>

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